

## REMARKS

Claims 1-17 are pending in the application. Claims 9 and 12 are currently amended. Applicant respectfully requests for allowance of all the pending claims.

### Claim Objections

Claim 9 is objected to because of certain informalities. In amended claim 9, “NO<sub>3</sub>” is replaced with “NO<sub>3</sub>”. Applicant believes that the objection is therefore overcome.

### Rejections under 35 U.S.C. §103

#### Claims 1-2 and 4-14

Claims 1-2 and 4-14 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Patent No. 6,309,532 to Tran et al. (hereinafter referred to as “Tran”), evidenced by U.S. Patent No. 6,071,484 to Dingman, Jr. et al. (hereinafter referred to as “Dingman”).

**A. The rejections of claims 1-2 and 4-14 under 35 U.S.C. 102(b) are improper.**

A claim is anticipated under section 102 only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628-631 (Fed. Cir. 1987). Neither Tran nor Dingman teaches or suggests each and element as set forth in independent claim 1 or 12. For example, with respect to claim 1, none of the references teaches or suggests the element “continuously adding to the closed loop a quantity of water corresponding to the quantity of aqueous solution of the ionic species removed

from the ion absorption unit.” As another example, with respect to claim 12, none of the references teaches or suggests the element “a quantity of the concentrated aqueous solution removed from the outlet is replenished by adding water into the closed loop circulation system.” Thus, the references do not anticipate either claim 1 or claim 12 under section 102. Accordingly, claims 2, 4-11, 13, and 14 that depend from independent claim 1 or 12 and include all the limitation recited therein are not anticipated by the cited references under section 102, either.

**B. Claims 1-2 and 4-14 are patentable over the cited references under section 103.**

Independent claim 1 is directed to a method for the treatment of gaseous chemical waste. The method comprises continuously bringing the circulating water into contact with the ion absorbing means in the ion absorption unit while applying an electrical potential across the thickness of the ion absorbing means and removing from the ion absorption unit a more concentrated aqueous solution of the ionic species. For example, as shown in FIG. 2, ion absorption unit 8 receives circulating water at inlet 2, removes a more concentrated aqueous solution of ionic species at outlet 6, and outputs the deionized circulating water at outlet 1. The ion absorption unit 8 has one inlet 2 and **two** outlets 1 and 6, in which outlet 6 outputs an aqueous solution with a higher concentration of ionic species than that of the circulating water received at inlet 2.

Similar disclosure “a quantity of the concentrated aqueous solution removed from the outlet” can be found in independent claim 12.

Tran fails to teach or suggest a method “removing from the ion absorption unit a more concentrated aqueous solution of the ionic species,” as described in claim 1, or an

apparatus having “an outlet for concentrated aqueous solution of ionic species from the ion absorption unit,” as described in claim 12. In Tran, the electrically regenerable electrochemical cell 30 has only one inlet 80, and **one** outlet 92. See, FIG. 3. Ionic species in the fluid stream are absorbed by electrodes 37 as it passes through the cell 30. As a result, the fluid stream output from outlet 92 has a lower concentration of ionic species than that of the stream received at inlet 80. Because there is no other outlet than 92 in cell 30, there would be no aqueous solution with a higher concentration of ionic species that can be removed from 30.

Furthermore, it would not have been obvious for a person skilled in the art in view of Tran to invent a method “continuously adding to the closed loop a quantity of water corresponding to the quantity of aqueous solution of the ionic species removed from the ion absorption unit” as described in claim 1, or an apparatus where “a quantity of the concentrated aqueous solution removed from the outlet is replenished by adding water into the closed loop circulation system” as described in claim 12. As discussed above, Tran fails to teach or suggest “removing from the ion absorption unit a more concentrated aqueous solution of the ionic species.” Thus, a person skilled in the art would not have been motivated by Tran to devise a method or apparatus that replenishes a loss of circulating water due to removal of a more concentrated aqueous solution of the ionic species.

Dingman is cited by Examiner as a reference for prior disclosure of a general closed loop scrubbing system, and not for the detailed working of the removal of the aqueous solution of the ionic species, or its replenishment. See, page 3. Thus, it does not cure the deficiencies of Tran.

Accordingly, claims 2, 4-11, 13, and 14 that depend from independent claim 1 or 12 and include all the limitation recited therein are patentable over the cited references under section 103.

**Claims 3, 15, 16, and 17**

Claims 3, 15, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tran in view of U.S. Patent No. 6,187,162 to Mir, U.S. Patent No. 5,045,291 to Keller, U.S. Patent No. 5,350,523 to Tomoi et al., and U.S. Patent No. 4,795,565 to Yan.

As discussed above, independent claims 1 and 12 are patentable over the Tran and Dingman under section 103. Accordingly, claims 3, 15, 16, and 17 that depend from claim 1 or 12 and include all the limitations recited therein are patentable over the cited references under section 103, as well.

### CONCLUSION

Applicant has made an earnest attempt to place this application in an allowable form. In view of the foregoing remarks, it is respectfully submitted that the pending claims are drawn to a novel subject matter, patentably distinguishable over the prior art of record. Examiner is therefore, respectfully requested to reconsider and withdraw the outstanding rejections.

Should Examiner deem that any further clarification is desirable, Examiner is invited to telephone the undersigned at the below listed telephone number.

Applicant does not believe that any additional fee is due, but as a precaution, the Commissioner is hereby authorized to charge any additional fee to deposit account number 50-4244.

Respectfully submitted,

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